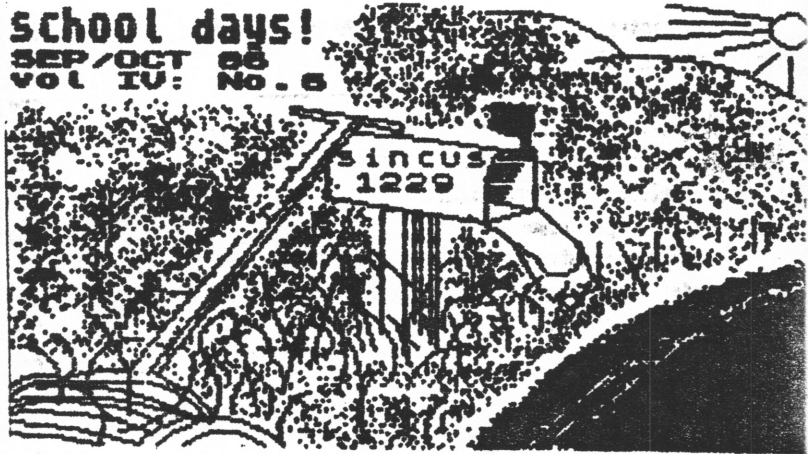


School days!  
SEP/OCT 86  
VOL IV: No. 6



SINCLAIR COMPUTER USERS' SOCIETY  
SINCUS NEWS VOL 4: NO 6  
SEPT/OCT 1986

**NOTE: NEW MAILING ADDRESS**

ALL MAIL FOR SINCUS/SINCUS NEWS TO GO TO:  
PAUL HILL, SEC'TY SINCUS  
1229 RHODES ROAD  
JOHNSON CITY, NEW YORK 13790

ALL SUBSCRIPTIONS, RENEWALS, SWAPS, AND REQUESTS FOR DATA TO BE ADDRESSED ABOVE. OUR OLD ADDRESS TO BE IN EFFECT FOR SEVERAL MONTHS, BUT AS A COST CUTTING MEASURE THE PO BOX WILL NOT BE RENEWED.

STARTING WITH THE NEXT ISSUE:  
--WES STARTS LISTINGS OF THE TS2068 ROM DISASSEMBLY  
--SINCUS LOOKS BACK OVER THE LAST FOUR YEARS, AND TRIES TO PEEK AHEAD!

AS THE COST OF PRODUCTION OF THE NEWSLETTER GOES UP, AND THE NUMBER OF SWAPS WITH OTHER USER GROUPS INCREASES, WE CONTINUE TO SEEK WAYS AND MEANS OF MAINTAINING OUR LOW SUBSCRIPTION RATE TO YOU. PHOTOCOPIING HAS BECOME TOO COSTLY, AND WE ARE RETURNING TO MEMOGRAPHICS. THE POST OFFICE IS NOW REQUIRING US TO PUT OVERSEAS AND CANADIAN MAIL IN ENVELOPES AND ADDING ON EXTRA POSTAGE. IN ORDER TO KEEP THE CANADIAN MAILINGS COST IN LINE, I WILL KEEP THE OVERSEAS NEWSLETTER TO 5 SHEETS, THE 6TH SHEET, TO BE THE LOCAL MEET NEWS AND OUTSIDE MAILER. WE HAVE NOT GONE "OFFICAL NON PROFIT", AVOIDING A LOT OF PAPERWORK, AND PULLING OUR OWN WEIGHT AS FAR AS MAILING GOES. THIS IS WHAT WE ARE DOING TO KEEP OVERHEAD DOWN. WE WOULD APPRECIATE YOUR COOPERATION BY LETTING US KNOW WHAT YOU WANT TO SEE, OR BY WRITING AN ARTICLE, COMMENTS, OR SENDING IN A PROGRAM TO SHARE. AND BY PAYING DUES ON TIME.

IN THIS ISSUE:

NEWS, NEWS, VIEWS AND REVIEWS.....	1,2,3
COMPUTER INTERRUPTUS (LAST ONE).....	4,5
PROGRAMS BY SCOTT EDDY.....	10
WES PENS LIGHT IDEA.....	8,9
NODEN NEWS.....	7
ACROSS THE OCEAN.....	3
LOCAL MEET NEWS.....	11

A TAPE IS BEING PREPARED BY SEVERAL MEMBERS TO BE CIRCULATED THRU THE MEMBERSHIP, TO GET IN ON THIS, SEND A TAPE OF YOUR FAVORITE HOMEMADE OR COPIED FROM NODEN OR MAGAZINES TO SINCUS. INCLUDED THE NAME AND SOURCE OF PROGRAM IF NOT YOUR OWN IN REN STATEMENTS. IF YOUR OWN, BE SURE TO INCLUDE YOUR NAME AND ADDRESS. BE SURE TO INCLUDE YOUR NAME AND ADDRESS ON THE CASSETTE, AS AFTER ALL PROGRAMS HAVE BEEN COPIED, THE CLUB PROGRAM, AND YOURS WILL BE RETURNED. TIME OF RETURN AT PRESENT IS UNKNOWN, AND UNTIL A VOLUNTEER STEPS FORWARD...NO COPYRIGHTED MATERIAL PLEASE.

News, News, Views and Reviews by Paul Hill

NEW from Novelsoft--Artvorx version 1.1 features:  
 \$Pull down menus .magnify and reduce .several brushes  
 .spray .auto fill .cut & paste windows  
 .several fonts \$fast arc/ellipse .rotate & mirror  
 \$zoom \$undo \$elastic shapes  
 \$new this version for Spectrum and 2068 - \$19.95(US) PLUS \$3 S&H (PS send a US PO Money order its faster than check)  
 NEW from Novelsoft-TIMACHINE, a Basic to machine code compiler. Written by Cameron Hayne, for the 2068 and Spectrum for \$19.95 plus \$3 S&H. I will review this program later in this issue, meanwhile get that money order in the mail tonight!

Novelsoft  
106 Seventh Street  
Toronto, Ontario Canada M8V 3B4  
Tele:(416) 259-8682 Compuserv 70416, 1435

NEW from Electret Scientific Company, PO BOX 4132, Star City, West Virginia 26505

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Order Musician Royal from Electret Scientific at \$20 postpaid.

Until 12/86 YOU CAN ORDER THE DEMO FOR \$3, CREDIT TOWARDS FUTURE PURCHASE of Musician Royal.

NEWS from Sync Times, the newsletter of North East Florida Users Group, 1707 King Street, Jacksonville, FL 32204 in the July 1986 issue mentioned that TIME DESIGNS magazine brought out SUM of Gainesville Florida. SUM was a very good buy for the buck. It was \$12/year for 12 issues, and was becoming a very decent source of info for the TS user. TIME DESIGNS will take over the subscribers to SUM, and will hopefully become bigger and better. I mailed in my subscription this month, how about you too! TIME DESIGNS, 29722 Hult Rd, Colton, OR 97017, only \$15 a year. And the Sync Times has devoted much of its issue to the modem, and supporting programs for the modem and the printer.

NEWS from Timeliner, PO Box 1312, Pacifica CA 94044 has some data via the TAS BAN Users' Group, PO Box 644, Safety Harbor FL 33572- the people at TAS BAN have with Tom Wood's blessing modified PRO- FILE to operate on the Rotronics Wafa Drive system. If interested send a request for data with a SASE.

NEWS from Atlanta TS Users Group, c/o Bret Lanus, 1049 N. Carter Rd., Decatur GA 30030 writes:

"Western Union has an on-line service that lets you send Telegrams, cablegrams, Telex, and electronic mail. If you order from England using cable or telex, you can send your credit card number. You can make arrangements with WU to wire money. Costs \$25/year, a mailgram costs \$3, an electronic letter is .35, telegrams are .05 @ word and \$2.75, call 1-800-527-5184

From the gotta have dept. T shirts and sweatshirts with user friendly and some, well...ya gotta see 'em. Write to:

Last Word, PO BOX 6221  
Keene, NH 03431

\$10 for T's and \$19 per sweatshirt, plus \$1.50 S&H

The T/S Connection Service Department, Carver Technologies, Watterson Ave., Cincinnati, OH 45227 handles repairs on your TS equipment. \$10-15 on the 81, 1000, 1500, 2040 and \$35-40 on the TS2068. This is for OUT of warranty service! In warranty service send to TIMEX Product Service Center, Building 19, Adams Field, Little Rock, Ark. 72203. This info dated 6-10-86.

Other products:

Noteworthy: From Batter Boy Productions-the ultimate in music programs-\$19.95 + 2.50 S&H

Loader V from Curt Kasby-addon to Mterm 2 up load from Tasword 2--\$9.95 + 2.50 S&H

lots more write for product list

NEW- C O L O S S U S - a low res graphics, scrolling banner program. By Stan Lenke, 2144 White Oak, Wichita, KS 67207. Send \$19.95 ppd. Four fonts or design your own, use 2040 or 80 col printer. Write for data or order one today!

NEWS, REVIEWS & REVIEWS From Ian Robertson's SincBits column from the Toronto TS Users Group----

"...the first AMSTRAD Spectrum, to be called the Spectrum Plus Two, scheduled for an autumn release. It will have a built in cassette recorder and possibly a proper keyboard.

..."N/Drive Doctor 3.0", from Pipeq Systems, 151 Millbridge Rd., Dollos Valley Way, Barnet, Herts, UK. It has 13 commands which enhance your m/d computing pleasure. This is a 9.5 out of 10 product. Another such (highly rated) product is "Multi face 1", from Romantic Robot, which not only saves "any" program at the push of a button, but also allows you to goto basic and add pokes, revise, etc. It does all as claimed and is compatible with the BETA and Kempston DBI's....TASPRO when merged with Tasword II it allows your 80 col. printer to print out text with identical spacing between words. From Seven Stars Publishing, 34 Squirrel Rise, Marlow, Bucks SL7 3PW UK, 88, airmail inc.

...If you are thinking of a Kempston Joystick for your 2068, order one with a 46 pin connector NOT the 56 pin connector. Cheetah and Date both have both models for sale. If you end up with a 56 pin connector, order a Kempston Compatible IF from John Olliger, Zebra Systems, or Russell Electronics.

...ZX81/TS1000 hard-software available from Fred Nachbar, Silicon Mountain Computers, C-12, Mtn. Stn. Group Box, Nelson BC V1L 5P1, Canada write for catalog, and include a large SASE.

...It appears that FIREBIRD will NOT be using Lenslok again, after the poor reception it received when used with their program "ELITE". Several comments concerning difficulty of use are appearing in many UK mags.

...Thanks Ian. Sorry to hear you damaged your Spectrum +, zapped your JLO video upgrade with static electricity. Apparently Timex, Little Rock works only on IN warranty units, see TS Connections, Cincinnati Oh. Note to readers-about 99% of Ian's reviews are on his purchases, so he is telling not only of the product performance, but also of service by the seller, and the best way to put two items together.

REVIEWS: T I M A C H I N E-----by Cameron Mayne.

This is a preliminary review, as I have had about six hours of introduction to this program. It compiles basic programming into machine code. The tape comes with a 52 page manual. The tape is two sided, one for the TS2068 and the other for the Spectrum. Reading thru the manual for the first time, little made much sense to me. I program fast and dirty in basic, and machine code is still an engina to me. At first the REAL and INT and POSINT started to turn me off. But what the hay, I spent the first 20 minutes, trying to load the Spectrum side

into my 2068. Not succeeding, I tried the other side. It loaded, and right off, it asks, "Wanta copy??" Take my advise sir, make the copy, and now. I waited. I shouldnt ta. The second session with Tinachine and the blinken thing wont load, until the forth try, THEN I make the backups. So far the backups work fine thank you, I make at least 2, and use them both, saving the orginial. The tutorial with the six examples on the cassette help with the mechanics of getting the compiler to work. And I had a basic program, on Fractorals I copied outa the Cincinnati TSUG newsletter, it loaded, made a single change to the program, and saved it. I loaded the new mc program and VOILA-fast, less time to LOAD, and FAST. The BASIC version drew a 3 dimensional landscape in the highest resolution in about 1/2 hour, about 4 minutes with the compiled version.

The manual is well written, covers about one main topic per page, well layed out and logical. The more you know about mc the better off you are using this, a straight game player may be lost, more so than one with a little programming background.

It will take me some time to get the hang of it, the compiler, while fast, has to work around a lot of basic programming that I have spent time learning. Using logic in GOTO's like, this:

```
10 GOTO (200 AND a$="2")+ (300 AND a$="3")
```

This has to be change to:

```
10 IF a$="2" THEN GOTO 200
```

```
15 IF a$="3" THEN GOTO 300
```

The manual tells you how to avoid the problems, but doesnt quite paint a complete picture. The author probably knows this, but a twit like me gotta learn the hard way. Little things like a mc program needs a basic loader program, and one to run the mc, these can be one program. Also if you save the loader with a LINE 1, it will auto run and then LOAD the mc and RUN it or whatever you want.

Some basic commands are not in the compilers bag like LOAD and SAVE and a few others, so the BASIC is used, and the finished program hops back and forth from mc to basic. The numbers, REAL and INT and POSINT are so far not a problem, but until I figure out the meaning of all this, I will probably avoid using numbers-ha.

This is a difficult program to rate-no competition to compare to, that I own. The manual contains few errors, goes to length on several points which clear up many functions, but just short on some like I already mentioned on the LOADER. With use the manual becomes better, or maybe I read it better. I do see much editing of BASIC programs BEFORE putting it to the compiler. I crammed a ZZK program in, and it crunched it thru pass one, then erase the basic and then find GOTOs with no line number matching. The compiler makes two passes, quite fast, puts addresses on the screen, and if it runs into problems, tells you what the problem and what line. But in the case of a big basic program, it will need to erase the BASIC after the first pass to make room. Hence most if not all problems should be edited out prior to the compiling session.

After about six hours I feel satisfied I got what I paid for-\$19.95 (US) plus 93 S&H. I mailed a Postal Money order on the

advise of Ian Robertson,(it clears faster than a personel check) and got the cassette in less than 10 days. I ordered from NovelSoft, 106 Seventh St. Toronto, Ont, Canada M8V 3B4. After a few weeks I'll write a final assessment of TINACHINE. I recommend it already, but depending on your computer smarts, it will take an investment of time to learn how to use this to its best advantage.

by Paul Hill, SINCUS-----

#### NEWS FROM ACROSS THE BIG OCEAN

As most of you are aware, ZX COMPUTING is one of the best sources of information for the poor TS user in the States. Unfortunately, the editors decided to change the format from a bi-monthly mag to a monthly. The new look just does not live up to their old standard as a magazine known for its useful programs and information. Now it primarily a source of reviews. But never fear, there is a whole girth of magazines available to the TS user which seem to reach a happy medium. I'll just touch on several of them in this article and give you a brief idea of what they have to offer.

YOUR SINCLAIR, 14 Rathbone Place, London, W1P 1DE, England, published monthly. Cost \$25(\$37 US), accepts VISA and MASTERCARD. This magazine is a good mix of SINCLAIR news, tips, reviews and programs. Although there is very little for the ZX-80 or ZX-81, there is a wealth of new information, reviews and programs for the SPECTRUM (most will fit the TS2068) as well as the QL. This magazine's format is similar to ZX COMPUTING but the program listings seem to be easier to read. I recommend this magazine.

SINCLAIR USER, ENAP Business & Computer Publications, Priory Court, 30-32 Farringdon Ln., London EC1R 3AU, write for rates. This magazine is similar to YS but it tends to have more reviews of new and current programs than programs to poke in yourself. There are several columns devoted to helping novice computerists and those who are experiencing problems with their computers (not with our SINCLAIRS!!!!). This magazine has excellent advertisements although I can't vouch for any of them. If you need or like to read about software before you buy then this magazine is for you.

CRASH, Newsfield Ltd. 1-2 King St. Ludlow, Shropshire SY8 1AQ, write for rates. This magazine is a happy medium between the above two. It has about the right amounts of news, reviews and programs. The advice offered to those having problems is straight forward and easy to follow. Of the three, I recommend this above the others.

Next time, I'll cover other computer mags which have alot of SINCLAIR information but are not limited to just these computers. If anyone would like to write, here is my address:

SFC William M. Pierson III

P.O. Box 2011

APD NY 09069

I will answer all who write and would be happy to correspond on a regular basis.

Thanks to the following for their help and contributions on this newsletter edition; Clyde Tackley, Wes Brzozowski, Scott Eddy, John Colonna, Dave Schoenvetter, Phoenix Pete, Bill Pierson, and Ian Robertson. Paul Hill, Editor, SINCUS NEWS

# Computus Interruptus, Part 8

-Or, the joy of using the interrupt on your computer

-by Wes Brzozowski, SINCUS

All good things must end. This series has to end too, and with a small quiver of nostalgia (and a great sigh of relief) we'll finish it with this installment. We mainly want to describe the interrupt driven sprite program first introduced here so long ago, but there's one more matter to cover.

In case you missed the original sprite article, the listing is included here. I know it's lengthy, but type it in and run it. Then type RANDOMIZE USR 64776 to start the fun. The little sprite will bounce happily around the screen, and will keep bouncing, even while you type in your own BASIC programs and run them. While you run a BEEP command or do I/O to the cassette or TS2040 printer, he stops, producing a visual indication of whether or not the interrupt is enabled.

There's nothing unusual about the BASIC program. It mostly just inserts the necessary machine code. Lines 40 and 50 install the standard "Kludge Block" and JP instructions we've been using since the beginning of this series. In case your memory needs refreshing, this was to allow IM2 to work even if your system doesn't have pullup resistors on your data lines. In this program, all the action is in machine code.

Whenever the interrupt occurs, it's diverted from its intended task of reading the keyboard. Instead, we figure out where the sprite should be moved to, move it, and THEN we allow the computer to read the keyboard, and get back to its real business.

Moving the sprite is fairly easy. Before we ever write the sprite to the screen, we save whatever is already there. When it comes time to move the sprite, we replace the old information, figure out where the new sprite should be, save the character at the new location, and then write the sprite. As such, the sprite passes through an area, leaving everything exactly as it found it.

Well, almost. Let's suppose that, after writing the sprite in a certain spot, the "foreground" program writes another new character on that same spot. If we moved the sprite exactly as described, it would replace the old character rather than the new one when the sprite moved on. This would never do.

To fix this, the program doesn't replace the old character until it first checks the supposed location of the sprite. If it doesn't find the sprite character there, then it assumes your own program has already changed that location, and it doesn't change it back. Note that all 8 bytes of the screen character must match the 8 bytes of the sprite character. As long as you're only writing text to the screen, this is OK.

But if you're PLOTTing individual pixels, and just happen to put or clear a pixel on the sprite character, the 8 bytes will no longer match up, a stationary "son of sprite" will be left on the screen. Worse, if you do a CLS, lots of pieces of sprite will remain on the otherwise clear

screen. These "spritelets" remain because the screen lines are cleared in the same odd order that you see them filled when you LOAD a SCREEN#. As the sprite moves from space to space, it has lots of chances to get a line or two erased from itself. This modified sprite then stays for good.

As explained in the original article, before you do a CLS, or a PLOT, or draw a LINE or CIRCLE, you should first disable the sprite with POKE 64898, 1. When you're done you can restart the sprite with RAND USR 64776.

But to be practical, it's probably best just to ignore this little problem. This program is just a demonstrator. It proves its point with the smallest amount of code. It gives an example of how the job is done and how you can use it or some thing like it in your own programs. A quick look at the code will show it is how. Table 1 has a quick description of each part of the program.

The block STOR8 is the 8-byte space where the screen character is stored while the sprite is "borrowing" its space. BUG1 contains the character pattern for the sprite, and you can change it to suit your mood. LOCS is the row and column location of the sprite, and DIRS contains the directions in which it happens to be moving. FLG is the byte you can poke when you want the sprite to go away. When the main sprite program sees a "1" here, then after it replaces the old character, it goes back to IN1, putting an end to all this spritely business.

The code contains four relocatable routines that have to do with display file tricks, and you can copy them to your code for your own use. If you're familiar with the unusual layout of the display file, you may appreciate some code to make it more manageable. If you actually want to walk through the code, you may first wish to read "Navigating through the Display File Jungle", (SINCUS NEWS, May/June 1986).

The first relocatable routine, BETD18, is entered with the character's line number in the B register, and the column number in E. We exit the routine with the display file address of the top byte of the character in HL. My display file article explains how to get at the rest of the bytes when you have the address of the first one.

The next relocatable routine, BET8, puts bytes from 8 consecutive locations at (BC) into the display file character at (HL). As such, it moves data from the sequential order we like to use, into the non-sequential order of the display file. The relocatable routine SAV8B does it backwards. Moving the 8 non-sequential character bytes at display file address (HL) into 8 consecutive locations at (BC).

The last relocatable routine is CONP8, which compares the 8 sequential bytes at (BC) to the 8 non-sequential bytes at display file locations (HL). We exit the program with Z=1 only if both characters match exactly.

Table 1 describes the rest of the routines quite adequately, so that you can easily follow a disassembly of the

**FD00 STOR8** - Temporary storage for the 8 bytes "wiped out" by the sprite

**FD08 START** - Setup routine that starts up the sprite

**FD18 SRVINT** - Interrupt service. If the FLG byte contains 00, it moves the sprite & runs the keyboard routine. Otherwise, it shuts off the sprite

**FD40 NEWBUG** - Places the 8 bytes at BUG1 into the display file location defined by LOCS.

**FD4E UPDATE** - Computes new location & direction

**FD7E LOCS** - The row & column location of the sprite

**FD80 DIRS** - The x and y directions of the sprite

**FD82 FLG** - Tells SRVINT whether or not to continue running the sprite

**FD83 BUG1** - The 8 bytes that make up the sprite

**FDB0 OLDBLK** - Replaces the old character on top of the sprite, provided that the sprite is still there.

**FD45 GETDIS** - Gets the display file address of a character. Input D=line, E=column. Output HL=address

**FDB4 GETB** - Puts bytes from 8 consecutive locations at (BC) into the display file character at (HL)

**FDBE SAVEB** - Puts bytes for 1 character at display file location (HL) into 8 consecutive locations at (BC)

**FDCB COMPB** - Compare the bytes for 1 character at display file location (HL) with 8 consecutive bytes at (BC). Return with Z=1 if all 8 are equal

**FDD3 SAVCHR** - Saves the character at (LOCS) into STOR8

TABLE 1: Functional Blocks for the Sprite Routine

other routines. Each routine has been kept deliberately small, so that they'd be easy for you to follow and modify. However, since we've already covered the main problems of interrupt driven sprites, we can end it here. With a little work, you should be writing your own more elaborate sprite programs in no time!

Now this series is done, and you are an expert on the subject of TS2068 interrupts. To prove your expertise on the subject, I'm hereby awarding you with a diploma, suitable for framing, lining your bird cage, or making those loose shoes fit just right. If you'd like a full size copy, personally signed by myself in not-quite-flickering orange crayon, just send me a stamped, self addressed envelope and an idea or two on what other technical matters you'd like to see written about. This offer is good until I lose interest and don't feel like doing it anymore, so write today!

```

10 REM Sprite Demonstrator
20 REM Enable Sprite With
   RAND USR 64776
30 REM Disable Sprite With
   POKE 64898,1
35 CLEAR 64767
40 FOR j=65024 TO 65280: POKE
J,253: NEXT j
50 POKE 65021,195: POKE 65022,
27: POKE 65023,253
90 LET checksum=0
100 RESTORE 1000
110 FOR j=64776 TO 64992
120 READ dat: LET checksum=chec
ksum+dat
130 POKE j,dat
140 NEXT j
150 IF checksum<>30092 THEN CLS
: PRINT "Checksum Error!!!!!!!"
: STOP
1000 DATA 243,237,94,62,254,237,
71,175,50,130
1010 DATA 253,205,211,253,205,64
,253,251,201,245
1020 DATA 197,213,229,205,139,25
3,58,130,253,167
1030 DATA 32,16,205,78,253,205,2
11,253,205,64
1040 DATA 253,225,209,193,241,19
5,56,0,237,86
1050 DATA 225,209,193,241,251,20
1,1,131,253,237
1060 DATA 91,126,253,205,165,253
,205,180,253,201
1070 DATA 237,91,126,253,237,75,
128,253,62,31
1080 DATA 187,32,2,14,255,175,18
7,32,2,14
1090 DATA 1,186,32,2,6,1,62,23,1
86,32
1100 DATA 2,6,255,237,67,128,253
,123,129,95
1110 DATA 122,128,87,237,83,126,
253,201,10,10
1120 DATA 1,255,0,60,66,165,129,
165,153,66
1130 DATA 60,237,91,126,253,205,
165,253,229,1
1140 DATA 131,253,205,200,253,32
,8,225,1,0
1150 DATA 253,205,180,253,201,22
5,201,122,230,7
1160 DATA 15,15,15,179,111,122,2
30,24,246,64
1170 DATA 103,201,22,8,10,119,36
,3,21,32
1180 DATA 249,201,22,8,126,36,2,
3,21,32
1190 DATA 249,201,22,8,10,3,190,
192,36,21
1200 DATA 32,248,201,237,91,126,
253,205,165,253
1210 DATA 1,0,253,205,190,253,20
1
9998 STOP
9999 SAVE CHR$ 18+CHR$ 1+"Sprite
"+CHR$ 18+CHR$ 0 LINE 10

```

As always, I'm interested in hearing from what's on your mind, so feel free to write me, Wes Brzozowski, 337 Janice St., Endicott, NY 13760. Please enclose a stamped, self addressed envelope if you wish a reply. I'm also glad to receive your phone calls, I'm at (607)785-7007. Please try to call before 9:30pm, and DON'T call collect, thank you. Hope to hear from you soon!

# Sincus School of Computer Perversities

This is to certify that

Has been awarded the esteemed title of

## Master of Computus Interruptus

After having endured a horrendous series of discourses on the subject of making the TS2068 perform strange tasks it was never intended to do. The recipient is now fully capable of performing similar acts of unnatural computing and of shocking the living daylights out of computer friends, not to mention anyone who glances at this diploma, without actually reading it.

*WES B.*

Wes Brzosowski  
Chief Interruptor

Renewals: Thanks to George Penney, Gary Ennis, Ovego, NY; Edward Tribe, Deposit, NY; Charles Koeth, Endwell, NY; Scott Eddy, Endicott, NY; Stanley Livingston, Johnson City, NY; Carl Morris, Kirkwood, NY; William Tilley, Mal Sohn, Vestal, NY; Don Lanen, Windsor, NY; Hubert Kessel, John Colonna, Binghamton, NY; Bill Pierson, Germany; John Livingston, Port Washington, NY; Ian Robertson, Islington, Ontario;  
Hello and welcome to Richard Herd, Warrenton OR, and Stan Hooper, Bell CA.

\*\*\*\*\*  
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\*\*\*\*\*

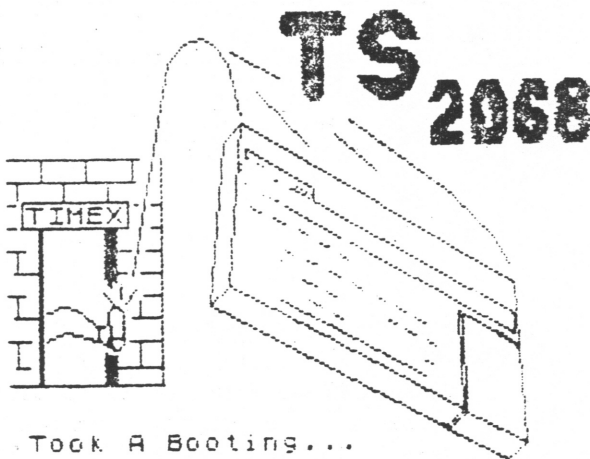
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Took A Booting...  
But Kept On Computing!

From Phoenix Pete, PO Box 2002, Tempe, AZ, 85281:  
 following is an excerpt from a letter from Phoenix Pete to Dave Schoenwetter, SINCUS.  
 "...BTE Sprint has now extended it's services to over 1700 area codes. If you fall into one of these area codes, you can make unlimited modem phonecalls (during off hours only) for a flat fee of \$25/month! No voice calls allowed. It may seem like a lot, but there are 2 TINEX boards in L.A. with about a megabyte each of Tinex software for downloading. Hopefully this new development in P.C. pursuit will make possible an increase in L.A. callers, and still more boards. It is in this spirit that Steve & myself began work on the 'I/S User Guide to BBS's'. It will gather a LOT of scattered information in one place. We hope to have it out by the end of September or early October. We will be distributing it for free if you provide a SASE..."

CASBY'S LOADER V - 'THE SPOILER'  
 by John Colonna, SINCUS

Kurt Casby's LOADER V software package provides five programs that are enhancements to the Mterm modem software. His LOADER V continues on right where Mterm left off. The combination of Mterm and LOADER V makes 'modeming' a joy! And it is certainly a good value for the money. Where can you get five quality programs for only two dollars each? The entire set costs only \$9.95. This is a good example of integrated quality software that is available for the 2068 at a very reasonable price.

The first program in the series is LOADER. This is an Mterm enhancement that allows for a larger dialing menu in addition to using the Mterm dialing menu. Twenty numbers can be utilized from the LOADER menu permitting a total of thirty-four. It is suggested that the LOADER menu be used as the principal one because it has more numbers available, the numbers can be dialed more rapidly, and, yes, there is an auto-redial function. These added features make the accessing of BBS systems much more convenient. And all the functions of Mterm are still usable! LOADER is menu-driven and allows for three choices from the main menu. One option is to enter the Mterm program, the second is to go to Loader's twenty number dialing menu, and the third is to load a 'bytes' program for transfer to a BBS or to another computer.

The second program in this series is TSXmodem. Xmodem is a transfer protocol that allows for error checking. Files and programs are transferred in blocks of 128 bytes each. As each block is transferred it is checked for accuracy. The sending computer totals up the values of all the individual bytes. At the end of each block, this number is also sent. The receiving computer also adds the values. This total value, called the 'checksum', is compared to the checksum transmitted by the sending computer. If the values match, then the block of data was sent correctly and the receiving computer acknowledges this and asks for more data to be sent. If there is an error and the two checksums do

not match then the block is sent again (usually up to ten times) until it is correct. For each block that is correctly sent, a plus sign is displayed on the monitor. If a minus sign appears it is an indication of an error. This method has been proven to be 99.6% effective. Since I have been using Xmodem I have downloaded and uploaded many programs and have only seen one minus sign. Incorrect transmissions usually occur when there is excessive noise on the line. Transferring data during extreme weather conditions such as storms could result in improper reception. Not only is Xmodem accurate, but it is also quick and convenient. File transfer is achieved at a rate that is about fifty per cent faster than with ASCII protocol. If you are on-line using Xmodem it could mean fewer dollars spent. Finally, Xmodem is a 'spoiler'. With ASCII transfers one must be aware of which type of a program is being sent or received and the appropriate conversion set, the correct prompts entered, and the correct control characters sent to initiate or terminate transfer. With Xmodem all one need do is exit to BASIC and use the PRINT USR command and sit back and watch those plus signs on the screen. And Xmodem accomodates all types of transfers whether it is a basic or machine code program, text file, or SCREEN\$.

The three other programs in this package are called RELOADER, UNLOADER, and CIS-UP. RELOADER is used in conjunction with LOADER. It allows one to load a number of programs while on-line. It is most effective and efficient when used with a storage mechanism such as a microdrive or disk. UNLOADER translates files that have been uploaded to the buffer as well as Mscript files into Tasword II files and then saves them to tape. CIS-UP allows hex uploading to BBS systems like CompuServe that have a fixed line length. The latter two programs have been donated to the public domain by Kurt Casby. Thank you, Kurt!

The documentation provided with LOADER V is excellent and covers many areas to allow for flexibility and experimentation. Help is provided to gain not only a better understanding of LOADER V, but also Mterm, and word processors like Tasword II and Mscript. By the way, the first program (LOADER) is compatible with Dave Schoenwetter's Aerco patch for Mterm, but not so with TSXmodem and CIS-UP.

For more information or if you wish to buy this program, contact:

Kurt Casby  
 25 Battle Creek Court  
 St. Paul, MN 55119

Around the country list from Phoenix Pete:

- |    |                        |               |               |
|----|------------------------|---------------|---------------|
| 01 | The Time(x)Change      | (213)329-3922 | LOS ANGELES   |
| 02 | The Average Remote BBS | (213)325-0213 | " "           |
| 03 | Zebra Systems          | (718)296-2229 | New York, NY  |
| 04 | Serial Port            | (313)286-0145 | Mt.Clemens MI |
| 05 | Ovego Free Academy     | (607)754-3420 | Ovego, NY     |
|    | " " "                  | (607)687-4346 | " "           |
| 06 | Nite Owl BBS           | (312)459-5721 | Chicago, IL   |
| 07 | Bill's Obsession       | (404)377-2550 | Atlanta, GA   |
| 08 | TSV Network            | (216)327-1099 | Cleveland, OH |
| 09 | Southern Connection    | (404)446-6269 | Atlanta, GA   |
| 10 | Omni-Net               | (718)837-2881 | New York, NY  |

# The Sincus Light Pen

-An experimental project  
by Wes Brzozowski

Here's a nice little project you can whip up and get running in a couple of hours, or you can choose to spend as long as you want refining and upgrading it to suit your particular demands. This light pen plugs into the joystick port, and is so simple that you'll spend more time putting together the joystick connector than you will wiring the things up!

Before describing the light pen, we need some background. Your TV set works by sending a bright spot flying across the screen, drawing individual lines, eventually making a complete picture. Because our eyes tend to "see" the brightness of the spot after it has moved elsewhere, we perceive a picture. But if our eyes had a faster response, all we'd see would be a moving dot, and TV displays as we know them would be worthless.

Fortunately, our eyes are a bit slower than that, but the light pen has the ability to detect the spot as it streaks by, and by synchronizing our program to the video display, we can measure the time it takes for the spot to go from the top of the picture to the light pen. This tells us the vertical position of the pen, and a sample program, included here, demonstrates this. (Those who want to learn more about synchronizing a program to the video should read "Computus Interruptus, part 7 (SINCUS NEWS, Jul/Aug 1986)

Finding the horizontal position is a bit more difficult. The D'Ktronics light pen for the Spectrum does this by putting a large white rectangle on the proper vertical position, and collapsing it until the light pen momentarily doesn't see the spot going by anymore. It then collapses the rest of the rectangle until it knows exactly where the pen is. The demonstrator program doesn't do this, but I'm sure some of you readers will be glad to expand it. Since this will involve putting white shapes directly into the display file, you may first want to read "Navigating through the Display file Jungle, (SINCUS NEWS, May/June 1986).

If you're starting to suspect that there's some reasoning behind the order in which I publish my articles here, you're absolutely right! An experimental project like this ties arcane concepts together into something practical. It also encourages us to work together on projects; an idea that will become increasingly important as vendor support fades.

In any case, either of the two lightpen circuits in figure 1 send a low signal to the joystick "FIRE Button" pin when the spot is in front of the light pen (and the address lines have been diddled properly) and a high signal, otherwise. The fact that there are two light pen schematics will accommodate the many different types of phototransistors available.

What's a phototransistor? Basically, it's a transistor that switches on when light is shined on it. For the technical crowd, all transistors essentially start out as phototransistors. Photons of the proper wavelength can kick electrons in the base region from the valence band into the conduction band, where they'll support conduction, turning the transistor on. The fact that most transistors are sealed in a metal can or black epoxy hides this fact. Phototransistors may have design tweaks to optimize their sensitivity, but we can think of them as ordinary transistors in a clear epoxy package.

Because we often only turn the transistor on with light, some phototransistors only have two wires, the collector and the emitter. Others have the third "base" lead connected so that the transistor can also be biased into its linear region, if desired. But you'll find no biases here, bucko! If you've that third lead, you can tape over it, or cut it off, or whatever, 'cause you don't need it.

For ordinary silicon, the energy difference between the valence and conduction bands is equal to the energy of a photon in the infrared region of the spectrum, so phototransistors are usually most sensitive to this, as well. It's too bad, because the glass in your picture tube filters most of the stuff out, letting only the visible light pass.

This is why there are two light pen schematics.

The type 1 schematic is what you'll probably want if you're lucky enough to scrouge up a phototransistor that's optimized for visible light. The type 2 schematic is for infrared transistors. It adds a transistor to increase the pen's overall sensitivity, and it almost does it too well. With the type 2 circuit, ordinary room lighting affects my prototype in an unusual way. The miniscule amount of light that leaks through the plastic pen case causes false readings. I had to cover the whole pen over with black electrical tape to keep the thing from going bonkers.

The pen should be wide enough that the transistor fits almost all the way down inside. If it's too far away from the surface of the picture tube, it may not reliably see the "spot". Again, the infrared coming from the picture tube is fairly dim. Even if you have to tape over the pen to keep the light out, the picture tube, which seems brighter, really isn't. Since we can't see in the infrared band, this isn't at all obvious to us.

It'll take a bit of work to make a connector to plug into the joystick port. It turns out the connector is recessed too far into the TS2068 for a standard 9 pin D connector to fit. The plastic insert inside the D connector will fit fine, but it'll go in so far that there'll be nothing left to grip to pull it out. Figure 2 shows a reasonable way to solve this problem. Make sure your wiring is correct before you apply the epoxy; there'll be no second chance. Incidentally, you can easily make a "mold" for the epoxy extension out of cellophane tape. Just wrap it around the insert, and make sure it's on tight with no holes before you pour the epoxy in.

When the pen is finished, plug it in to the left port and type in listing 1. When running, the computer should beep like crazy, whenever the light pen is pointed at a lamp or the sun. You may also get it to beep a bit by holding the light pen



against the TV screen, but BASIC is too slow to do this properly, and it seems to have some tendency to synchronize improperly to the video, making only some small portions of the screen useable. To use the light pen on the screen, use listing 2.

The program will move an asterisk in the left hand column to whatever vertical position the pen is at, on the screen. It will also plot pixels at the proper vertical position, and print pen's distance from the top of the screen. The small machine code portion uses the HALT instruction to synchronize us to the video, and then updates a counter until the light pen sees the spot. This is a measure of the pen's distance from the top of the screen, and is returned to the BASIC program.

Line 60 of the BASIC program converts this to a pixel distance. By subtracting 180, we remove the approximate number of counts that occurred in the top border area and above, before the spot got into the active part of the screen. By dividing by 5, we can account for the fact that the counter is updated about five times per video line. Neither of these numbers is immutable. I worked them out by trial and error, so feel free to change them a bit. By the way, when we add .5 and take the INT, we really just round up or down to the nearest integer. This part should not be changed.

You may have to adjust the brightness and contrast on your set to get decent results. If your set is real old and the picture tube is shot, you may find portions of the tube where light pen won't work reliably. There's not much we can do about this.

By the way, if you let the light pen go off the screen into the border area, or point it away from the screen altogether, you'll get a false reading for a moment. Commercial light pens usually include a switch to tell the computer that the pen is at a valid location. You may wish to include something like this, or change the code so that you press a key when you want a reading taken.

Lastly, note that you'll stay looping in the machine code if the pen never sees any light, so if you want to BREAK out of the program, make sure that the pen is pointed at the screen, or you'll be ignored.

I've found this little project to be quite fun. I'd be interested in hearing of your improvements or problems, and will help out in whatever way I can. Radio Shack does carry an infrared phototransistor, if anyone tries it, let us know how it does.

The simplicity of the thing should make it particularly nice for club projects. Once we show the software guys which end of the soldering iron to hold, they'll be glad to go out and whip up some dandy code to put this gadget through its paces. Until then, it's a nifty project for all you tinkerers, out there. Enjoy!

```

10 REM Light Pen Tester
20 BRIGHT 1: CLS
30 IF STICK (2,1)=1 THEN BEEP
  04,1
40 GO TO 30

```

Listing 1. To debug Light Pen

```

2 BORDER 0
5 BRIGHT 1: CLS
10 DATA 62,7,211,245,62,191,21
1,246,62,14,211,245
20 DATA 1,0,0,118
30 DATA 62,255,219,246,3,254,1
27,32,247,201
40 CLEAR 32767
45 LET oldrow=0
50 FOR j=32768 TO 32793: READ
k: POKE j,k: NEXT j
60 LET line=INT (.5+(USR 32768
-180)/5)
65 IF line>175 THEN LET line=1
75
66 IF line<0 THEN LET line=0
70 LET row=INT (line/8)
80 PRINT AT oldrow,0;" ": PRIN
T AT row,0;"*"
82 PRINT AT 10,10;line;"
"
83 OVER 1: PLOT 50,175-line: 0
VER 0
85 LET oldrow=row
90 GO TO 60

```

Listing 2. Light Pen Demo

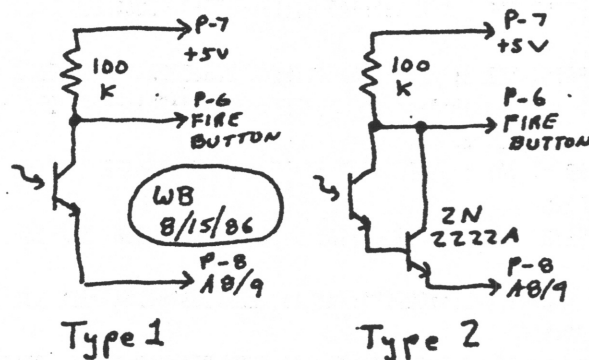
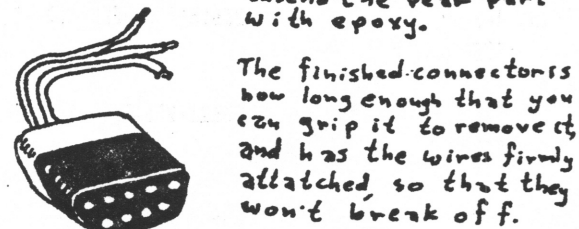
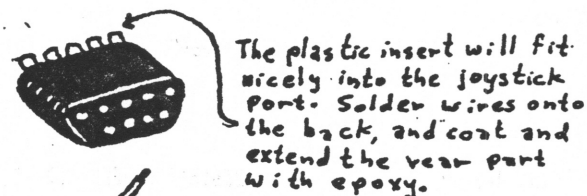
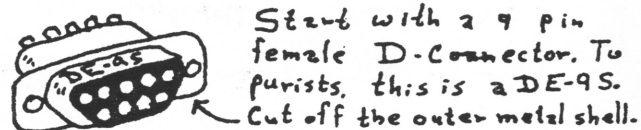


FIGURE 1.

Both types of light pen! Which will work best depends on the type of phototransistor you have to work with



-W.B. 8/15/86-

FIGURE 2.

Making A Joystick Connector

SYSTEM VARIABLES  
by Scott Eddy, SINCUS

Here is a program which you can merge with one you have written and which will print out a list of goodies such as how many bytes of basic, machine code and free space you have, where the character set you are using is located, et cetera. This program is for the TS 2068 and uses about 2036 bytes.

```

9600 CLS
9610 GO SUB 9700
9620 STOP
9630 CLS
9640 GO SUB 9800
9650 GO TO 9900
9700 REM SysVars
9710 REM Borders
9715 PRINT
9720 PRINT TAB 3;"CHANS";TAB 11;PEEK 23631+256*PEEK 23632
9722 PRINT
9724 PRINT TAB 3;"PROG";TAB 11;PEEK 23635+256*PEEK 23636
9726 PRINT TAB 18;"Basic ";(PEEK 23627+256*PEEK 23628)-(PEEK
23635+256*PEEK 23636)
9728 PRINT TAB 3;"VARS";TAB 11;PEEK 23627+256*PEEK 23628
9730 PRINT
9732 PRINT TAB 3;"E-LINE";TAB 11;PEEK 23641+256*PEEK 23642
9734 PRINT
9736 PRINT TAB 3;"WORKSP";TAB 11;PEEK 23649+256*PEEK 23650
9738 PRINT
9740 PRINT TAB 3;"STKBOT";TAB 11;PEEK 23651+256*PEEK 23652
9742 PRINT
9744 PRINT TAB 3;"STKEND";TAB 11;PEEK 23653+256*PEEK 23654
9746 PRINT TAB 18;"Free ";FREE
9748 PRINT TAB 3;"RAMTOP";TAB 11;PEEK 23730+256*PEEK 23731
9750 PRINT TAB 18;"Code ";(PEEK 23675+256*PEEK 23676)-(PEEK
23730+256*PEEK 23731)-1
9752 PRINT TAB 3;"UDG";TAB 11;PEEK 23675+256*PEEK 23676
9754 PRINT
9756 PRINT TAB 3;"P-RAMT";TAB 11;PEEK 23732+256*PEEK 23733
9760 RETURN
9800 REM SysVars2
9810 PRINT
9812 PRINT TAB 3;"CHARS ";PEEK 23606+256*PEEK 23607;TAB 18;
"Byte 1 ";PEEK 23606
9814 PRINT TAB 18;"Byte 2 ";PEEK 23607
9815 PRINT
9816 PRINT TAB 3;"NEWPPC ";PEEK 23618+256*PEEK 23619;TAB 18;
"NSPPC ";PEEK 23620
9818 PRINT
9820 PRINT TAB 3;"PPC ";PEEK 23621+256*PEEK 23622;TAB 18;
"LAST K ";PEEK 23560
9822 PRINT
9824 PRINT TAB 3;"E PPC ";PEEK 23625+256*PEEK 23626;TAB 18;
"ERR NR ";PEEK 23610

```

```

9826 PRINT
9829 PRINT TAB 3;"CURCHL ";PEEK 23633+256*PEEK 23634;TAB 18;
"BREG ";PEEK 23655
9830 PRINT
9832 PRINT TAB 3;"S TOP ";PEEK 23660+256*PEEK 23661;TAB 18;
"DF SZ ";PEEK 23659
9834 PRINT
9836 PRINT TAB 3;"OLDPPC ";PEEK 23662+256*PEEK 23663;TAB 18;
"SCR CT ";PEEK 23692
9838 PRINT
9840 PRINT TAB 3;"SEED ";PEEK 23670+256*PEEK 23671;TAB 18;
"CURC8N ";PEEK 23743
9842 PRINT
9844 PRINT TAB 3;"ERR LN ";PEEK 23734+256*PEEK 23735;TAB 18;
"STRMNR ";PEEK 23755
9850 RETURN
9900 REM End

```

RANDOM CHARACTERS  
by Scott Eddy, SINCUS

This one generates characters at random, and prints them out at random.

```

10 REM RandChrs
20 PRINT AT 10,10;"RandChrs"
30 PAUSE 150
40 CLEAR 64000
50 LET z=0
60 FOR c=32 TO 127
70 LET v=63744+8*c
80 FOR l=1 TO 8
90 IF l=1 OR l=8 THEN POKE v,0: LET z=0; GO TO 150
100 LET r=INT (RND*32)*4
110 IF r=0 OR r=12 OR r=24 OR r=44 OR r=48 OR r=52 OR r=56 OR
r=76 OR r=88 OR r=96 OR r=100 OR r=104 OR r=120 OR (z=1 AND
(r=28 OR r=92 OR r=108 OR r=112 OR r=116 OR r=124)) THEN GO TO
100
120 POKE v,r
130 LET z=0
140 IF r=28 OR r=92 OR r=108 OR r=112 OR r=116 OR r=124 THEN LET
z=1
150 LET v=v+1
160 NEXT l
170 NEXT c
200 POKE 23607,249
210 FOR n=1 TO 704
220 LET r=INT (RND*96)+32
230 IF NOT (r=124 OR r=126) THEN PRINT CHR$ r; GO TO 270
240 POKE 23607,60
250 PRINT CHR$ 32;
260 POKE 23607,249
270 NEXT n

```

## Secretary's Notes:

We held meetings on July 16, and on August 20, both were at the Vestal Library, and started at 7pm. Attendance was 16 and 17 respectively.

-Buses were collected at the July meet. Charlie Koeth took over the magazine library from Ed Tribe. Good luck in the upcoming school year Ed!

-Gary Ennis, our vice president, started the meeting with a demo of Vufile. Handing out 3 x 5 cards, and having volunteers sort and select data, he compared the old card file system to Vufile. The Vufile is available on both the 1000 and 2068 computers. While Vufile has been around since 1982-3, Gary felt that the power and use of the program had never been truly appreciated. With just two sorts-select and order, the user has the ability to pick out records by selecting data fields, and with order can arrange them alpha-numerically. The speed of the operation was appreciated by the card handlers when trying to sort alphabetically. Gary promised to continue the demo in August if there were no questions. There wasn't, and in August he did. At the July demo, he used NY computer and NY 2040 printer to show the various ways to print out different bits of data. Thanks to Stan's worrying, the printer paper wasn't used up.

-The August meet was quite busy, in fact demos ran from 7pm to nearly 10pm. A video tape made by the Milwaukee User Group of the Cincinnati Computerfest was shown on the 5' screen while the meet went on. Anyone interested in borrowing the VHS tape, contact Paul Hill.

-Gary had his Vufile demo back, Dave Schoenvetter had a EPROM burner to show, I had TIMACHINE to demo, and Wes had his light pen to demonstrate.

-Wes built a light pen that plugged in to the joystick port. He had written enough software to demo how it could draw a vertical line on the screen.

-Gary went into Vufile, this time on HIS computer with a SINCLAIR microdrive and composite color monitor. Speed and color-wow! Gary talked about designing the overlay or format for setting up a file system. How to design with mailing labels in mind. He has had much experience in using Vufile both in hobby and business to generate lists and labels.

-Dave cranked up a 1000 with several boards hanging off it, and it was up and running, as quick as plugging it in. The whole burner program is in EPROM. He can do up to 8K on a chip. He set it up to read the EPROM before, after. Not quite understanding what he has, I let him describe in another news article. The possible development of boards with several chips on, may give the user access to 2 ROMs, 8 or so programs all menu selected when the 2068 is turned! I had a couple programs, one in BASIC and the same in compiled machine code. Both were graphic printouts of large letters spelling out the club's name. The compiled program was 3 to 4 times faster than the BASIC. Then I loaded in TIMACHINE, and compiled FRACTORALS. The actual compiling once I remembered the REM statement took about 15 seconds, the FRACTORALS were generated in 5 minutes instead of 1/2 hour! TIMACHINE data in the news and views section page 1.

## News, News, Views and Reviews

NEWS from A+ Computer Response, 69-B Island St. Keene, NH 03431, (603) 357-1800 Telex # 6502946407 Via NCI/MJI:  
As of August 15, 1986 prices on QL computer per quantity orders:

QTY	Price
2-9	\$209
10-19	189
20-29	169
30 and up	149

add 4% for using Visa or Mastercard.

NEW-----68000 QL Computer KIT!-----NEW  
Price-----\$139.00-----write or call for quantity prices!

The Sinclair 68000 QL Kit includes:

Technical manual	QL Instruction manual
Monitor adapter cable	Serial cable
Complete Sinclair QL Kit--2 microdrives, case, mother-board and keyboard	
Microdrive cartridges	Power supply

Here it is folks!! What you been waiting for, it is now cheaper than the ZX80 or ZX81 when they first came out, can you believe these prices? If only cars would get cheaper as they got better like SINCLAIR computers did and still do.

NEWS, latest from Ian Robertson,--vanta CBC 5.25 full size 96 tpi, 80 track BSQD disk drive? Get one for \$39.95 or two for \$70, plus 10% for shipping, from Central Sales Co., 314 N. Central Ave., Duluth MN 55807--worth it if your interface can handle quad drives(800K). NOTE: Tasword 2/3 Utility "Qualitas", sold by Seven Stars Pub( U.K.) only works with Epson RX80 and compatibles with quad-density graphics. Will not work with the humble NT-80s. For 2068 fans, "Foote Print Centronics Interface" from Foote Software, PO Box 14655, Gainesville, FL 32604-4655. Cost \$45.00, cable and software inc (Zebra Zprint -80) This plugs into the cartridge port and has an EPROM socket on board. I use Doug Bevey's "Spectrum Emulator" 16K EPROM in this socket on board, and all workd ok, so far. Gives me the ability to print in either the Spectrum or 2068 mode, and the Zebra software allows you to print a grey scale to about a dozen different full sized printers. Check the Zebra catalog for details.

See you in November, have fun computing and hope to meet many via modem in upcoming weeks.....Sinclairly,

Paul Hill

Please update your

Thank you



files

Thank you

SINCUS new address is  
**SINCUS-SINCUS NEWS**  
c/o Paul Hill  
1220 Rhodes Rd.  
Johnson City, NY 13790